- An "Elevation Component" is developed in the GIS where a relative intensity score is assigned to each of six elevation classes. This component is designed to reflect the fact that similar fuels in higher elevations will generally burn with less intensity than those same fuels at lower elevations.

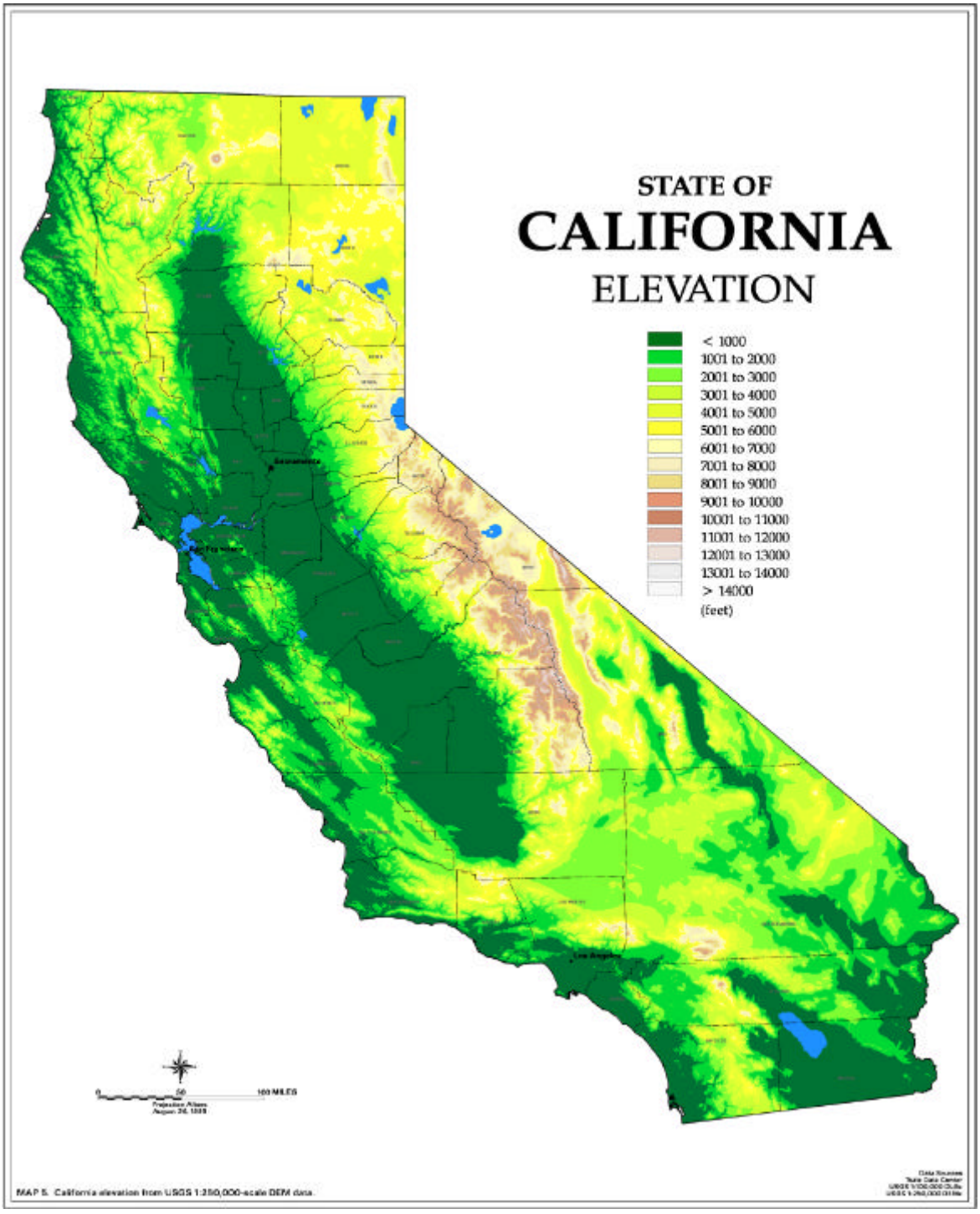

Figure 3.15 – Working Group Elevation Map

- Secondly, an "Aspect Component" is developed reflecting the differing burning characteristics attributed to aspect. For example, the south slope usually burns with more intensity than north slopes due to the increased exposure of fuels to daytime radiant heating. Relative scores are assigned to each aspect.

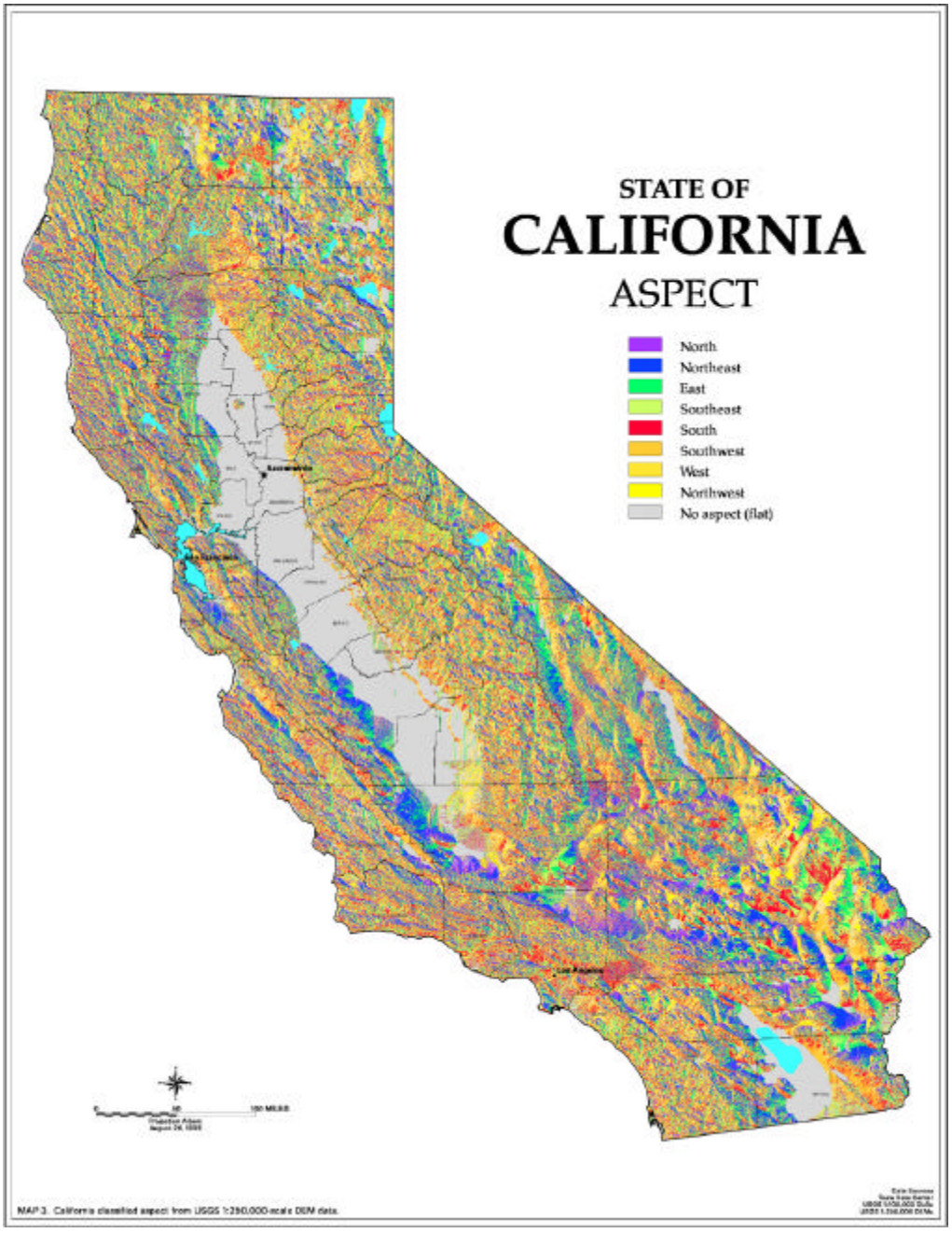

Figure 3.16 – Working Group Aspect Map

- Slope is the third component developed in the GIS used to evaluate burning intensity. As slope increases, a fire's rate of spread and intensity will increase. Each slope class is given a score to reflect it's relative intensity.

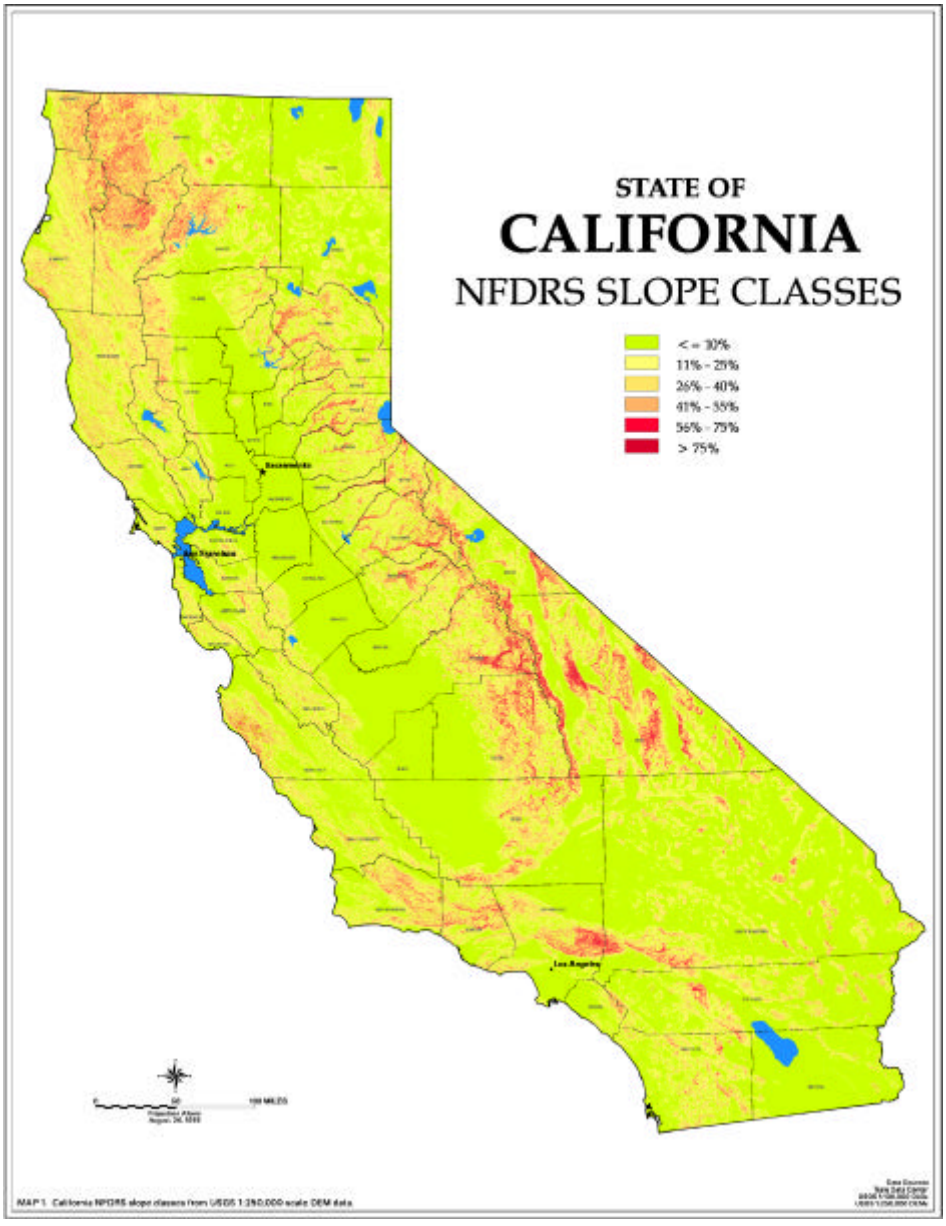

Figure 3.17 – Working Group Slope Map

- Finally, a frequency of severe weather rating based on the number of severe weather days reflected by hourly weather data collected at RAWS (Remote Automated Weather Stations) for each area is calculated

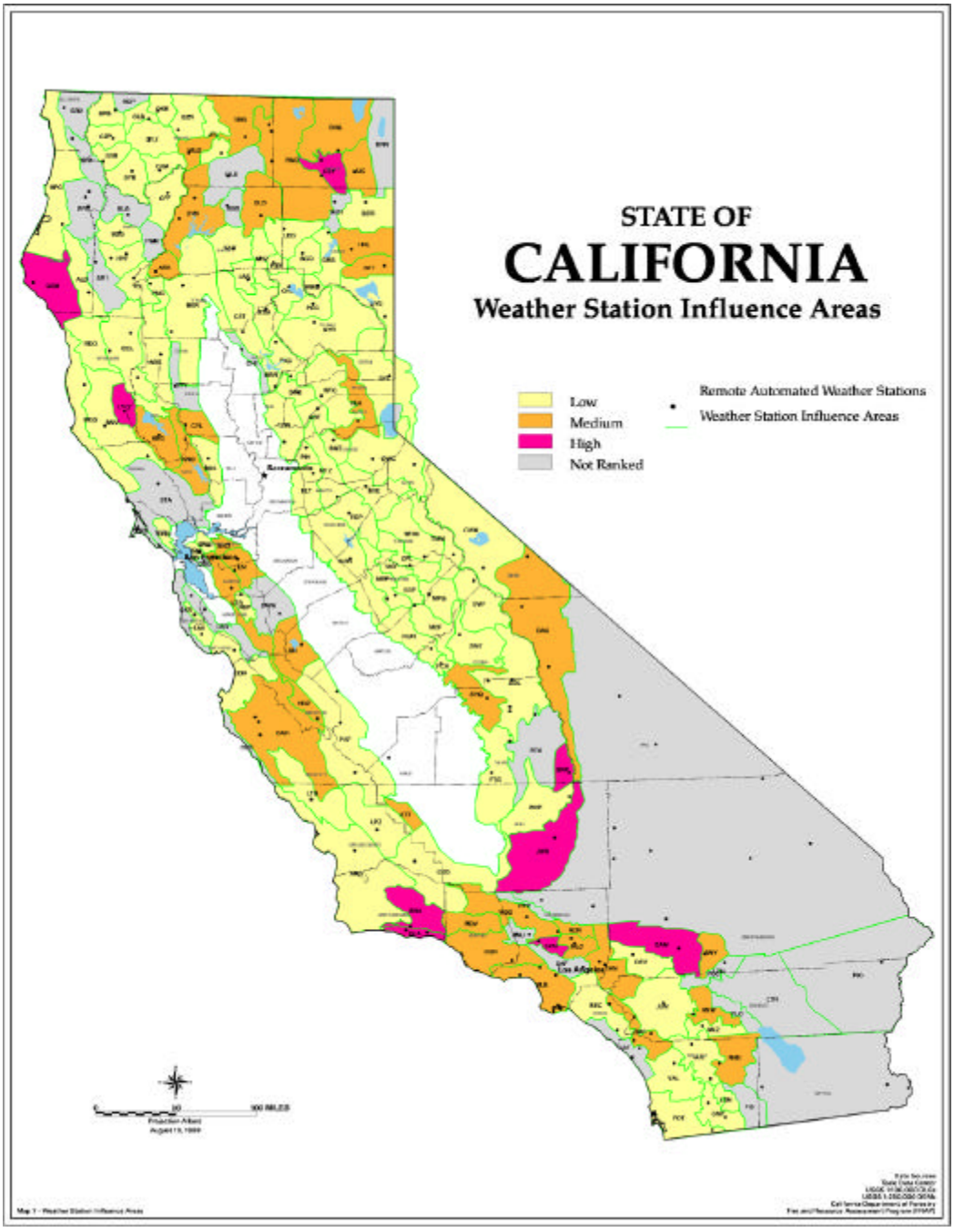

Figure 3.18 – Working Group RAWS/Weather Score Map

The above-described ranked values for elevation, aspect, slope, and severe weather frequency are averaged, resulting in each Q81 receiving a final "Weather Score". This score reflects expected relative burning intensities based on weather related topographic features.

The "Severe Fire Weather" score is then combined with the "Fuel Hazard Assessment" to create the final "Fire Hazard" matrix. The "Fire Hazard" matrix is then ranked and each Q81 cell is assigned a value of 1, 2, or 3. These numbers reflect the respective fire hazard of Moderate, High, or Very High. The final output of the process is a map showing the relative fire hazard at a scale of 450 acres

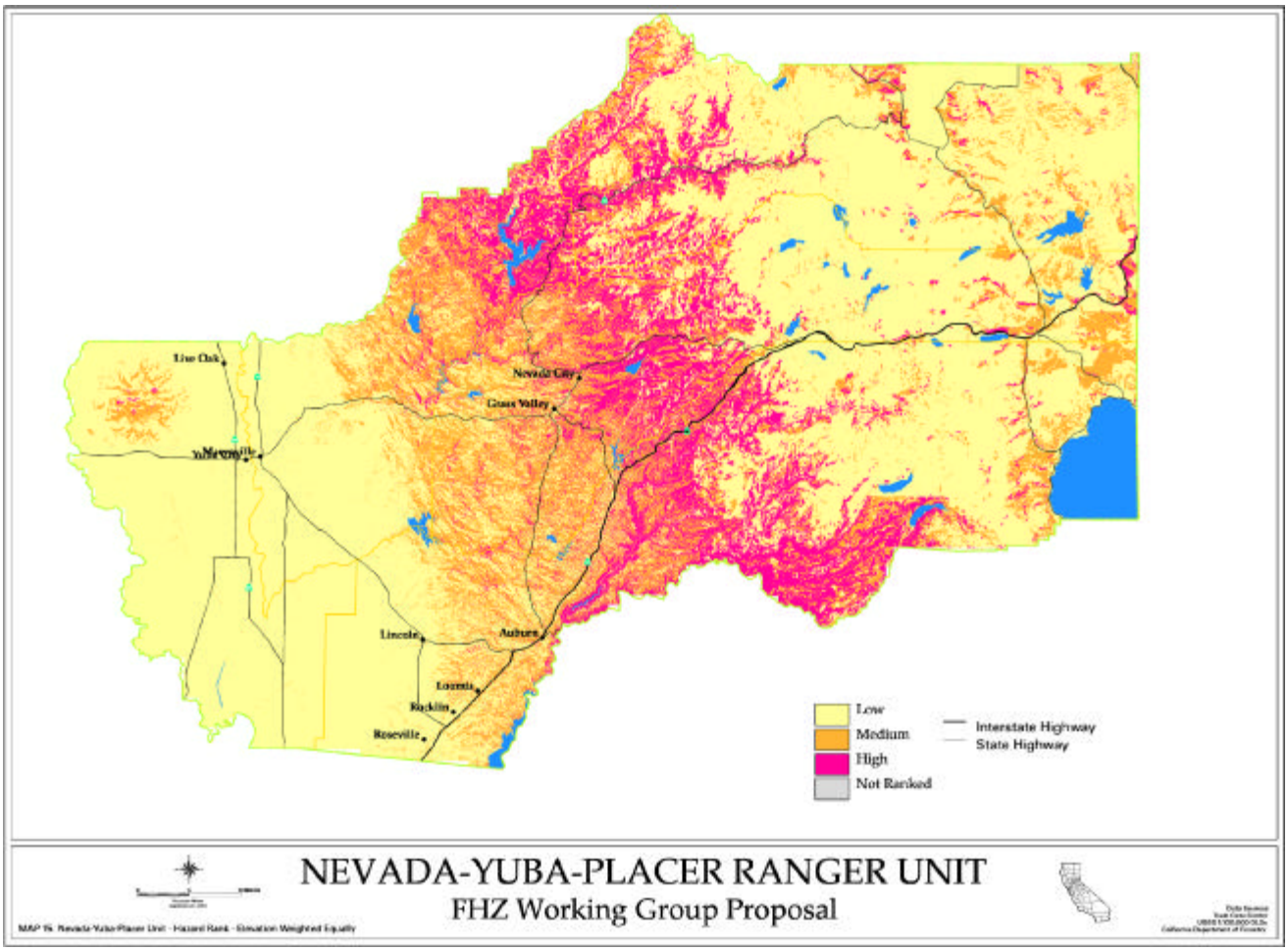

Figure 3.19 –Working Group Fire Hazard Severity Map

The process summarized above combines the best available GIS data sources with *California Fire Plan* methodologies, including the use of local Ranger Unit personnel and local stakeholders to validate data. This statewide computer-based process minimizes differing interpretations of data and insures the continuity, consistency, accuracy, and usefulness of the Fire Hazard Map.

Comments received on the draft that follows focused mainly on whether elevation should be given equal rating with the aspect and slope components. Everyone agreed that it should have a lower rating than the other elements. A test map has been produced to see what the different elevation rating might do to the results. This map is shown on the following page.

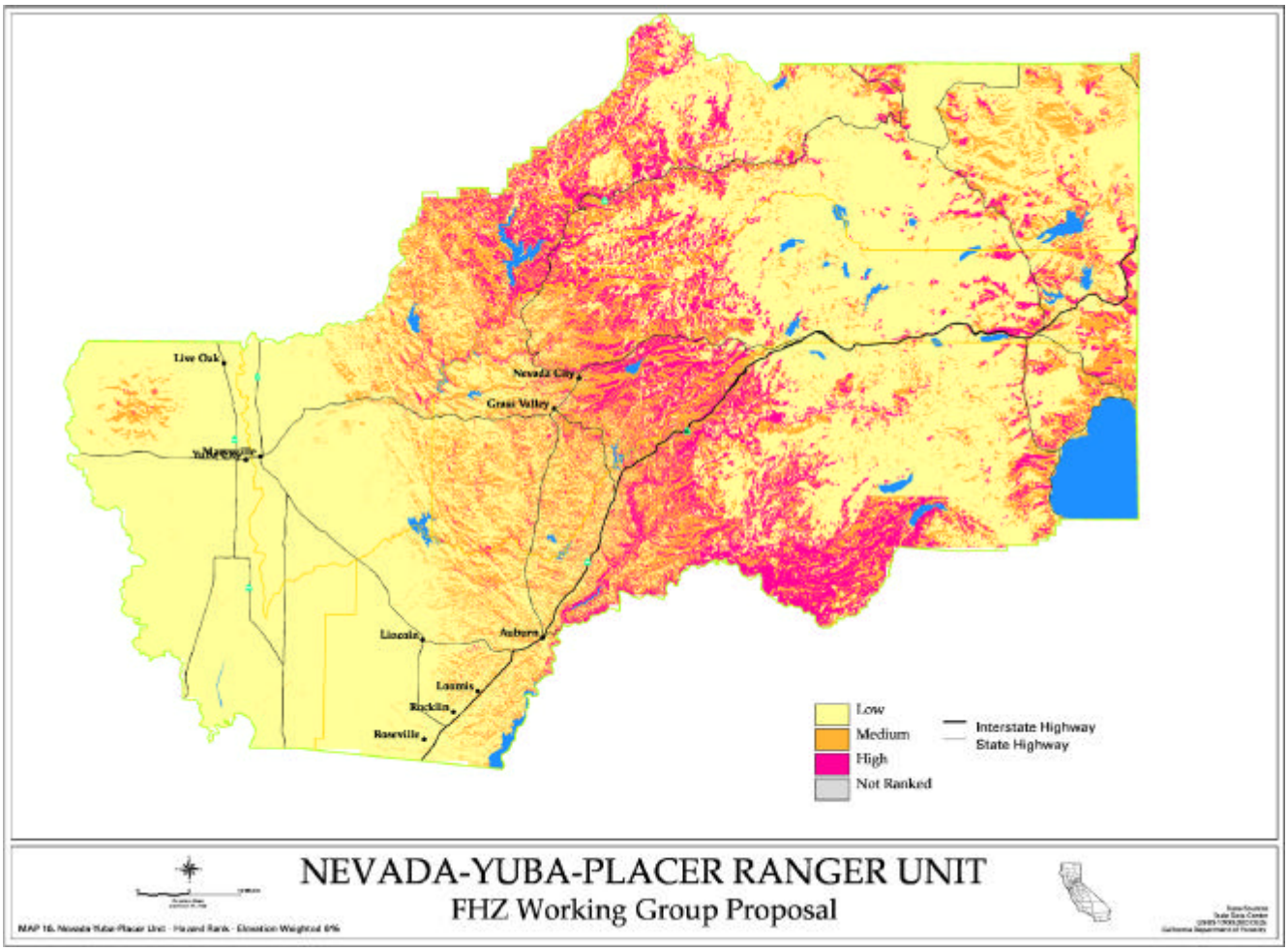

Figure 3.20 – Working Group Fire Hazard Severity Map (Elevation Weighted 6%)

The change in elevation weighting has affected the hazard map. Over the large pink area, the 6% weighted elevation component has produced a more refined depiction of the hazards present. Whether or not this refinement is relevant to the overall hazard assessment would be best decided by the local officials using the map, depending on its various purposes. It does seem, however, that the lower weighted elevation will more accurately reflect the other hazards (topography, aspect, fuels and weather), since a fully weighted elevation component might result in a high fire hazard assessment for areas of high elevation that might otherwise qualify as low or moderate fire hazards.

For more detailed information about the Fire Hazard Zoning Working Group's fire hazard assessment system, see Chapter IV of *Wildland Fire Hazard Assessment*.

3.5c. Brian Barrette's System for Rating Structural Vulnerability

While the CDF is not charged or mandated to provide structural protection, some of the fastest growing areas in California are protected by CDF, and providing structural protection often becomes the first priority when a wildfire occurs. Local units have usually developed own ratings for areas, and some have at least mentally decided whether a particular house, group of houses, or subdivision is defendable. The Bates system of rating LRA is one option for rating a particular area. Another option is to use the following system, which was developed by Brian Barrette, who was also a major contributor to the work done under the Bates bill, which is described elsewhere in this guide.

The system takes into account the three standard rating factors of fuel, weather, and topography by starting with the SRA fire hazard severity rating as determined using the SRA hazard assessment system described earlier in this chapter. This system further focuses on individual structures by also rating factors such as roofing, siding, vegetation clearance, roads and signage, chimneys, structural accessories, water supply, and the location of the structure in relation to the surrounding conditions. Intended for use in assessing survivability of structures on individual parcels, this system uses factors most known to affect structural ignition and loss. The system could also be used in conjunction with larger-scale assessments, or could be based on a base hazard rating achieved through a separate assessment system. The system is as follows:

		Points
1.	**SRA FIRE HAZARD RATING**	
	Very High	6
	High	4
	Medium	2
2.	**ROOFING COMPOSITION**	
	Untreated Wood	3
	Treated Wood	2
	Composition or Other Fire Resistant Material	1
3.	**SIDING**	
	Wood	3
	Combination	2
	Stucco/Brick	1
4.	**VEGETATION CLEARANCE**	
	Less than 30 feet; tree limbs closer than 10 feet to roof; dead branches near roof; leaves on roof	3
	Two or three of above present	2
	Meets all Firesafe Standards	1
5.	**ROADS AND SIGNAGE**	
	Steep; narrow; poorly signed	3
	One or two of the above	2
	Meets all requirements	1
6.	**CHIMNEYS**	
	No Screen	3
	Screened	2
	No Chimney	1

7.	**OTHER ITEMS**	
	Wooden deck; stacked firewood nearby; propane tank close by	3
	One or two of the above	2
	None of the above	1
8.	**WATER SUPPLY**	
	None, except domestic	3
	Hydrant, tank, or pool over 500 feet away	2
	Hydrant, tank, or pool within 500 feet	1
9.	**LOCATION OF STRUCTURE**	
	At top of steep slope with brush or grass below	3
	Mid-slope with clearance	2
	Level with lawn, or watered groundcover	1

VULNERABILITY RATING

VERY VULNERABLE	21-30 Points
VULNERABLE	16-20 Points
NOT VULNERABLE	10-15 Points

This is a system for rating the vulnerability of a structure in the event of an approaching wildfire. This system is not necessarily intended for use in mapping and does not address resolution. It can be used by individual homeowners with little to no knowledge of fire science, fire behavior, or building standards in order to determine whether their property is a good candidate for a fire hazard mitigation plan. This system is meant to be an "add on" system attached to SRA, Fire Plan, or other assessment systems that do not include structures and their vicinities as part of the base line criteria. It should be tested in SRA to see if it would be of value before actual adoption. This system can help the lay property owner perform a self-evaluation of his or her property and perhaps the surrounding properties as well. However, this system is only for determining immediate threats to a structure and not to an entire subdivision or region.

3.6. Hazard Assessment After the Fact

As stated above, local agencies can conduct their own hazard assessment projects if they see a need. The *Wildland Fire Hazard Assessment* (CDF 1999) analyzed various fire hazard assessment systems used in California and other states. Even though local agencies can conduct their own reviews, the most consistent hazard assessment project is one that ignores jurisdictional boundaries and identifies hazards regardless of where they are located. This would result in a more accurate statewide hazard assessment that could then be considered by all local agencies equally. However, the problem still remains that many local jurisdictions resist further action. In any case, political hurdles and sentiments still affect local fire hazard zoning.